AMENDMENTS TO THE CLAIMS

Listing of Claims:

1-9. (Cancelled)

10. (Currently amended) [[~~The method of claim 9, wherein said further combining comprises:~~]] A method of optimizing frequency conversion, comprising:

receiving an input signal having a first frequency;

controlling a level of said input signal;

receiving a local oscillator signal having a second frequency;

converting said first frequency into a third frequency by mixing said input signal with said local oscillator signal to generate an output signal having said third frequency said converting including a frequency down-conversion of a modulated input IF signal to an assigned one of a plurality of RF output channels having a frequency value selected from a set of desired frequency values by tuning said second frequency of said local oscillator signal to a corresponding frequency value;

controlling a level of said output signal;

combining variable attenuation, and variable or fixed amplification of each of said IF signal and RF channel;

filtering one or more distortion components from at least one of said plurality of assigned RF output channels;

determining a desired trade-off between a signal to noise ratio and a signal to distortion ratio of said output signal for each one of said set of desired frequency values;

achieving said desired trade-off by maintaining a constant desired output RF signal level by adjusting said level of said modulated IF input level to an extent not exceeding specification requirements set for said signal-to-distortion ratio of said output RF signal;

optimizing exchange rate coefficients on a channel-by-channel basis; and

programming said coefficients in non-volatile memory utilizing a controller.

11. (Cancelled)

12. (Previously presented) A method of optimized frequency conversion for generating a broadband composite signal having a plurality of RF channels, each of the plurality of RF channels including a unique subset of a contiguous range of channel frequencies, the method comprising:

assigning each of a plurality of modulation signals to each of the plurality of RF channels, each of the modulation signals having at least one frequency component and a first frequency;

converting the at least one frequency component from said first frequency to a third frequency wherein the third frequency is contained within the subset of channel frequencies corresponding to the RF channel to which each modulation signal is assigned, the converting further comprising:

mixing said plurality of modulation signals with signals having a first local signal to generate a signal having a second frequency;

amplifying a level of said signal having said second frequency;

mixing said amplified signal with a second local signal to generate a converted output having a frequency component equal to said third frequency;

attenuating said converted output for each of the plurality of modulation signals to produce a desired trade-off between a signal-to-noise ratio and a signal-to-distortion ratio of said output signal while maintaining a desired constant level of said output signal; and

summing the converted outputs.

13. (Previously presented) The method of Claim 12, wherein said attenuating of said converted output is sufficient to reverse said amplifying of said signal having said second frequency; and further comprising normalizing said converted outputs to substantially the same output level.

14. (Previously presented) The method of Claim 13, further comprising filtering a component of said converted outputs to provide a frequency equal to about two times said third frequency.

15. (Previously presented) The method of Claim 14, wherein said filtering further comprises providing a component of said converted outputs having a frequency equal to said second frequency minus said third frequency.

16. (Previously presented) The method of Claim 12, wherein said amplifying and said attenuating are
skipped for those modulation signals for which a distortion component having a frequency equal to said second frequency minus said third frequency cannot be filtered without affecting said converted signal.

17. (Cancelled)